0590



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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/939,483
DATE: 09/13/2001
TIME: 11:24:55

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             Lesage, Florian
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             Fink, Michel
             Lazdunski, Michel
      8 <120> TITLE OF INVENTION: FAMILY OF MAMMALIAN POTASSIUM CHANNELS, THEIR CLONING
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    59 Leu Tyr Leu Val Phe Gly Ala Val Val Phe Ser Ser Val Glu Leu Pro
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76			100					105					110		563
78 agc ac													_		563
79 Ser Tl	nr Val		Ser	Thr	Thr	GLY	_	GIŸ	Hls	'l'nr			Leu	Ser	
80	,	115			1.		120					125			C11
82 gat gg		_	_		_					_					611
83 Asp G		гуs	Ala	Pne			TT6.	туг	ser	vaı		GLÄ	TTE	Pro	
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86 ttc ac		_		_	_	-		-	_	_					659
87 Phe Tl		Leu	Phe			Ala	Val	Val	GIn	_	ITe	Thr	vaı	HIS	
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90 gtc ad	_		_	_											707 ·
91 Val T	nr Arg	Arg			Leu	Tyr	Pne	Hls		Arg	Trp	GTÄ	Pne		
92 160				165					170					175	755
94 aag ca			_		_		_								755
95 Lys G	in Val			Ile	Val	Hls	Ala		Leu	Leu	GLY	Phe		Thr	
96			180					185					190		003
98 gtg to	_					-	-	_	_				_		803
99 Val Se	er Cys			Phe	Ile	Pro			Val	Phe	Ser			Glu	
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102 gat															851
103 Asp 2		-	Phe	Leu	Glu			түг	. Phe	e Cys			e Ser	r Leu	
104	210					215					220				900
106 agc a			_		_					_					899
107 Ser !		э Сту	ьeu	. СІУ			· val	. Pro) GIY			т.А1	ASI	1 GIII	
	225			44	230					235			_ ~		047
110 aaa	_				_		_								947
111 Lys	Pne Arg	g Giu	ьeu			тте	: СТУ	, 116			з туг	цес	тес	255	
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114 ggc		_	_	_	_	_	_	_			_				995
115 Gly :	Leu II	e Ala			. vaı	vai	. Leu	265		PILE	e Cys	GIU	270		
116	ata ss		260		222	2+0	. ++~								1043
118 gag	_			_		_				_	_	_		-	1042
119 Glu 1	rea ry:	з Буб 275		AIG	гуѕ	Met	280	_	. vaı	. Lys	, пув	285	_	s Asp	
120		1			+ .	~~~				· ~+~	. +			. +	1091
122 gag	-							_		-					
123 Glu 2	_		нтѕ	116	tre			ASI	GII	те с	300		5 261	. 261	
124	290		~ ~ ~	aa+	~~~	295		~~~						- 424	1130
126 atc 3	_	_	-	_		_		-	_		_				1139
127 Ile '	-	eru	ATG	AId	. Gly 310		. πλε	, GIL	. ASE	315	-	GII	ı ASI	ı Giu	
	305 +++		~ ~ ~	. ~~~				. +~-	· ~+~				- ~~-	227	1187
130 cct		_		_			_	_		-			_		TT0/
131 Pro	rne va.	r Ald	TIII	325		sel	. Ald	су в	330		, GIĀ	LTC) WIC	335	
132 320	+ ~ > ~	~ ~	a+++			+ > + >	ra+	ra <i>«</i> **				·~~+ ^	T (12.2	333	1240
134 cat	Lyageg	Layg	allt	.y.c.cg	ca C	Lalg	julag	ia y	acca	19991	. cag	996	ycaa		1240

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Input Set : A:\DIV-2.txt

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147	7 atcatttagc tgatggctaa atagcaaaat ttatatttag aagcaaaaaa aaaaagcata 1														1600		
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Input Set : A:\DIV-2.txt

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Leu Ile Ala Met Leu Val Leu Glu Thr Phe Cys Glu Leu His Glu 218 260 265 270 270 275 280 285	214	Phe	Arg	Glu	Leu		Lys	Ile	Gly	Ile		Cys	Tyr	Leu	Leu		Gly							
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220 Leu Lys Lys Phe Arg Lys Met Phe Tyr Val Lys Lys Asp Lys Asp Glu 275			Ile	Ala		Leu	Val	Val	Leu		Thr	Phe	Cys	GLU		HIS	GIU							
221			T	T		7	T ***	Mo+	Dho		W-1	Two	Tvc	Acn		Nen	Glu							
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263 Leu Arg Ala Arg Tyr Asn Leu Ser Gln Gly Tyr Glu Glu Leu Glu 264 50 cyc ctc aag ccg cac aag gcc ggc ggc gtg cgc 362 266 cgc gtg ctg ctc caag ccg cac aag gcc ggc ggc tgg cgc 362 267 Arg Val Val Leu Arg Leu Lys Pro His Lys Ala Gly Val Gln Trp Arg Arg Arg Leu Lys Pro His Lys Ala Gly Val Gln Trp Arg Ala Ala Int Trp Ala Gly Val Int Int Ala Int Ala Int I			cqq	gcg	cgc	tac	aac	ctc	agc	cag	ggc	ggc	tac	gag	gag	ctg	gag	314						
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267 Arg Val Val Leu Arg Leu Lys Pro His Lys Ala Gly Val Gln Trp Arg 268 65 70 70 75 270 ttc gcc ggc tcc ttc tac ttc gcc atc acc gtc atc acc acc atc ggc 410 271 Phe Ala Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Gly 272 80 85 90 95 274 tac ggg cac gcg gca ccc agc acg gat ggc ggc aag gtg ttc tgc atg 275 Tyr Gly His Ala Ala Pro Ser Thr Asp Gly Gly Lys Val Phe Cys Met 276 100 105 110 278 ttc tac gcg ctg ctg ggc atc ccc cc acg ctc acg ctc gtc atg ttc cag agc 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 280 115 120 125						_																		
267 Arg Val Val Leu Arg Leu Lys Pro His Lys Ala Gly Val Gln Trp Arg 268 65 70 70 75 270 ttc gcc ggc tcc ttc tac ttc gcc atc acc gtc atc acc acc atc ggc 410 271 Phe Ala Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Gly 272 80 85 90 95 274 tac ggg cac gcg gca ccc agc acg gat ggc ggc aag gtg ttc tgc atg 275 Tyr Gly His Ala Ala Pro Ser Thr Asp Gly Gly Lys Val Phe Cys Met 276 100 105 110 278 ttc tac gcg ctg ctg ggc atc ccc cc acg ctc acg ctc gtc atg ttc cag agc 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 280 115 120 125	266	Cac																						
270 ttc gcc ggc tcc ttc tac ttc gcc atc acc gtc atc acc acc atc ggc 410 271 Phe Ala Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Gly 272 80 85 90 95 274 tac ggg cac gcg gca ccc agc acg gat ggc ggc aag gtg ttc tgc atg 275 Tyr Gly His Ala Ala Pro Ser Thr Asp Gly Gly Lys Val Phe Cys Met 276 100 105 110 278 ttc tac gcg ctg ctg ggc atc ccg ctc acg ctc gtc atg ttc cag agc 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 280 115 120 125		· cgc	gtc	gtg	ctg	cgc	ctc	aag	ccg	cac	aag	gcc	ggc	gtg	cag	tgg	cgc	362						
271 Phe Ala Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr Ile Gly 272 80 85 90 95 274 tac ggg cac gcg gca ccc agc acg gat ggc ggc aag gtg ttc tgc atg 458 275 Tyr Gly His Ala Ala Pro Ser Thr Asp Gly Gly Lys Val Phe Cys Met 100 276 ttc tac gcg ctg ctg ggc atc ccg ctc acg ctc gtc atg ttc cag agc 506 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 125	268	' Arg	gtc Val	gtg Val	ctg Leu	cgc Arg	ctc Leu	aag Lys	ccg Pro	cac His	aag Lys	gcc Ala	ggc Gly	gtg Val	cag Gln	tgg Trp	cgc Arg	362						
272 80 85 90 95 274 tac ggg cac gcg gca ccc agc acg gat ggc ggc aag gtg ttc tgc atg 458 275 Tyr Gly His Ala Ala Pro Ser Thr Asp Gly Gly Lys Val Phe Cys Met 100 105 110 278 ttc tac gcg ctg ctg ggc atc ccg ctc acg ctc gtc atg ttc cag agc 506 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 125 280 115 120 125	270	Arg	Val	gtg Val	ctg Leu	cgc Arg	ctc Leu	Lys	ccg Pro	cac His	aag Lys	gcc Ala	Gly	gtg Val	cag Gln	tgg Trp	cgc Arg	362						
274 tac ggg cac gcg gca ccc agc acg gat ggc ggc aag gtg ttc tgc atg 275 Tyr Gly His Ala Ala Pro Ser Thr Asp Gly Gly Lys Val Phe Cys Met 276 100 105 110 278 ttc tac gcg ctg ctg ggc atc ccg ctc acg ctc gtc atg ttc cag agc 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 280 115 120 125		Arg ttc	Val 65 gcc	Val ggc	Leu tcc	Arg ttc	Leu tac	Lys 70 ttc	Pro	His	Lys	Ala gtc	Gly 75 atc	Val acc	Gln acc	Trp	Arg ggc							
Tyr Gly His Ala Ala Pro Ser Thr Asp Gly Gly Lys Val Phe Cys Met 100 105 110 110 178 ttc tac gcg ctg ctg ggc atc ccg ctc acg ctc gtc atg ttc cag agc 506 179 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 180 115 120 125		Arg ttc	Val 65 gcc	Val ggc	Leu tcc	Arg ttc	Leu tac	Lys 70 ttc	Pro	His	Lys	Ala gtc	Gly 75 atc	Val acc	Gln acc	Trp	Arg ggc Gly							
276 100 105 110 278 ttc tac gcg ctg ctg ggc atc ccg ctc acg ctc gtc atg ttc cag agc 506 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 280 115 120 125	271 272	Arg ttc Phe 80	Val 65 gcc Ala	Val ggc Gly	Leu tcc Ser	Arg ttc Phe	Leu tac Tyr 85	Lys 70 ttc Phe	Pro gcc Ala	His atc Ile	Lys acc Thr	Ala gtc Val 90	Gly 75 atc Ile	Val acc Thr	Gln acc Thr	Trp atc Ile	Arg ggc Gly 95	410						
278 ttc tac gcg ctg ctg ggc atc ccg ctc acg ctc gtc atg ttc cag agc 506 279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 280 115 120 125	271 272 274	Arg ttc Phe 80 tac	Val 65 gcc Ala ggg	Val ggc Gly	Leu tcc Ser gcg	Arg ttc Phe gca	tac Tyr 85	Lys 70 ttc Phe	Pro gcc Ala acg	His atc Ile gat	Lys acc Thr	gtc Val 90 ggc	Gly 75 atc Ile aag	Val acc Thr	Gln acc Thr	Trp atc Ile tgc	ggc Gly 95 atg	410						
279 Phe Tyr Ala Leu Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln Ser 280 115 120 125	271 272 274	Arg ttc Phe 80 tac	Val 65 gcc Ala ggg	Val ggc Gly	Leu tcc Ser gcg	Arg ttc Phe gca	tac Tyr 85	Lys 70 ttc Phe	Pro gcc Ala acg	His atc Ile gat	Lys acc Thr ggc Gly	gtc Val 90 ggc	Gly 75 atc Ile aag	Val acc Thr	Gln acc Thr	Trp atc Ile tgc Cys	ggc Gly 95 atg	410						
280 115 120 125	271 272 274 275 276	Arg ttc Phe 80 tac Tyr	Val 65 gcc Ala ggg Gly	yal ggc Gly cac His	tcc Ser gcg Ala	ttc Phe gca Ala 100	tac Tyr 85 ccc Pro	Lys 70 ttc Phe agc Ser	pro gcc Ala acg Thr	His atc Ile gat Asp	acc Thr ggc Gly 105	gtc Val 90 ggc Gly	Gly 75 atc Ile aag Lys	acc Thr gtg Val	acc Thr ttc Phe	Trp atc Ile tgc Cys 110	ggc Gly 95 atg Met	410 458						
200	271 272 274 275 276 278	Arg ttc Phe 80 tac Tyr	Val 65 gcc Ala ggg Gly	yal ggc Gly cac His	tcc Ser gcg Ala	ttc Phe gca Ala 100 ctg	tac Tyr 85 ccc Pro	Lys 70 ttc Phe agc Ser	pro gcc Ala acg Thr	His atc Ile gat Asp	acc Thr ggc Gly 105 acg	gtc Val 90 ggc Gly	Gly 75 atc Ile aag Lys gtc	acc Thr gtg Val atg	acc Thr ttc Phe	Trp atc Ile tgc Cys 110 cag	ggc Gly 95 atg Met	410 458						
200	271 272 274 275 276 278	Arg ttc Phe 80 tac Tyr	Val 65 gcc Ala ggg Gly	yal ggc Gly cac His	tcc Ser gcg Ala ctg Leu	Arg ttc Phe gca Ala 100 ctg Leu	tac Tyr 85 ccc Pro	Lys 70 ttc Phe agc Ser	pro gcc Ala acg Thr	His atc Ile gat Asp ctc Leu	acc Thr ggc Gly 105 acg	gtc Val 90 ggc Gly	Gly 75 atc Ile aag Lys gtc	acc Thr gtg Val atg	Gln acc Thr ttc Phe ttc	Trp atc Ile tgc Cys 110 cag Gln	ggc Gly 95 atg Met	410 458						
282 ctg ggc gag cgc atc aac acc ttg gtg agg tac ctg ctg cac cgc gcc 554	271 272 274 275 276 278 279	Arg ttc Phe 80 tac Tyr ttc Phe	Val 65 gcc Ala ggg Gly tac Tyr	yal ggc Gly cac His gcg Ala	tcc ser gcg Ala ctg Leu 115	ttc Phe gca Ala 100 ctg Leu	tac Tyr 85 ccc Pro	Lys 70 ttc Phe agc Ser atc Ile	Pro gcc Ala acg Thr ccg Pro	His atc Ile gat Asp ctc Leu 120	Lys acc Thr ggc Gly 105 acg Thr	Ala gtc Val 90 ggc Gly ctc Leu	Gly 75 atc Ile aag Lys gtc Val	acc Thr gtg Val atg Met	Gln acc Thr ttc Phe ttc Phe 125	Trp atc Ile tgc Cys 110 cag Gln	Arg ggc Gly 95 atg Met agc Ser	410 458 506						



RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/939,483

DATE: 09/13/2001
TIME: 11:24:55

Input Set : A:\DIV-2.txt

	Leu	Gly		Arg	Ile	Asn	Thr	Leu 135	Val	Arg	Tyr	Leu	Leu 140	His	Arg	Ala	
284	224	220	130	cta	aac	atα	caa		acc	gac	ata	tcc		gcc	aac	atg	602
287	Lvs	Lvs	Glv	Leu	Glv	Met	Arq	Arg	Ala	Asp	Val	Ser	Met	Āla	Asn	Met	
288	цур	145			1		150			-	_	155					
290	ata	ctc	atc	ggc	ttc	ttc	tcg	tgc	atc	agc	acg	ctg	tgc	atc	ggc	J -	650
291	Val	Leu	Ile	Gly	Phe	Phe	Ser	Cys	Ile	Ser	Thr	Leu	Cys	Ile	Gly	Ala	
292	160					165					170					175	
294	gcc	gcc	ttc	tcc	cac	tac	gag	cac	tgg	acc	ttc	ttc	cag	gcc	tac		698
295	Ala	Ala	Phe	Ser	His	Tyr	Glu	His	Trp		Phe	Phe	Gln	Ala	Tyr	Tyr	
296					180					185					190	er er er	716
298	tac	tgc	ttc	atc	acc	ctc	acc	acc	atc	ggc	ttc	ggc	gac	tac	gtg	J - J	746
299	Tyr	Cys	Phe		Thr	Leu	Thr	Thr	Ile	Gly	Phe	GLY	Asp	Tyr	val	Ala	
300				195					200		~~~	a > a	t 2.0	205	acc	ttc	794
302	ctg	cag	aag	gac	cag	gcc	ctg	cag	acg	cag	Bro	Cln	Tur	y Ly Val	Δla	Phe	, , ,
	Leu	Gln		Asp	GIN	Ата	Leu	215	Thr	GIII	FIO	GIII	220	Val	1110	10	
304			210	+	a t a	a++	2.00		ctc	a ca	atc	atc		acc	ttc	ctc	842
306	agc	Dho	gre	Tur	Tla	TAIL	Thr	Glv	Leu	Thr	Val	Ile	Glv	Ala	Phe	Leu	
	ser	225	Val	тут	116	цец	230	GLY	ПСИ		, 42	235	7-1				
308	220	ctc	ata	ata	cta	cac		atq	acc	atq	aac		gag	gac	gag	aag	890
311	aac	Leu	Val	Val	Leu	Ara	Phe	Met	Thr	Met	Asn	Ala	Glu	Asp	Glu	Lys	
	240		, ,	V 04.22		245	•				250					255	
314	cac	σac	acc	qaq	cac		gcg	ctg	ctc	acg	cgc	aac	ggg	cag	gcg	ggc	938
315	Arq	Asp	Ala	Ğlu	His	Arg	Ala	Leu	Leu	Thr	Arg	Asn	Gly	Gln	Ala	Gly	
316	_				260					265					270		
318	ggc	ggc	gga	ggg	ggt	ggc	agc	gcg	cac	act	acg	gac	acc	gcc	tca	tcc	986
319	Gly	Gly	Gly	Gly	Gly	Gly	Ser	Ala	His	Thr	Thr	Asp	Thr	Ala	Ser	Ser	
320				275					280					285			1024
322	acg	gcg	gca	gcg	ggc	ggc	ggc	ggc	ttc	cgc	aac	gtc	tac	gcg	gag	gtg	1034
323	Thr	Ala			Gly	Gly	Gly		Phe	Arg	Asn	val	300	Ала	GIU	Val	
324			290			_ 1	.	295		a+ a	+~~	+ > 0			cac	gag	1082
326	ctg	cac	ttc	cag	tcc	atg	tgc	tcg	Crra	CLG	mrn	Tur	Tare	Ser	Ara	gag Glu	1002
				GIn	Ser	Met	310		Cys	Leu	ттр	315		001	1119	Glu	
328		305	a 2 6	+ > 0	+ 00	2 t c			ato	ato	cca			cto	tcc	acg	1130
330	aag	ctg	Cln	mar	Ser	Tle	Pro	Met	Tle	Ile	Pro	Arq	Asp	Leu	Ser	Thr	
	320		GIII	тут	JCI	325		1100			330		_			335	
334	520 tcc	, uac	മറന	tac	ata	_		aσc	cac	tcq	tcg	ccg	gga	ggg	ggc	ggc	1178
334	Ser	Acr	Thr	Cvs	Val	Glu	Gln	Ser	His	Ser	Ser	Pro	Gly	Gly	Gly	Gly	
336		nop		0,7 =	340					345					350		
338	cac	tac	aqc	gac	acg	ccc	tcg	cga	cgc	tgo	ctg	tgo	ago	ggg	gcg	cca	1226
339	Arq	Tyr	Ser	Āsp	Thr	Pro	Ser	Arg	, Arg	Cys	Leu	Cys	Ser	. Gl ⁷	Ala	Pro	
340)			355	•				360	•				365)		4074
342	cgc	tcc	gcc	ato	ago	: tcg	gtg	tco	c acg	ggt	ctg	cac	ago	ctg	r tcc	acc	1274
343	Arg	ser	Ala	Ile	e Ser	Ser	Val	Sei	Thr	Gly	, Leu	ı His	s Ser	Let	ı Ser	Thr	
344			370)				375	-		_		380				1207
346	tto	cgc	ggc	cto	atg	r aag	cgc	agg	gago	tco	gtg	r tga	actgo	ccc	gagg	gacctg	T 2 7 /
347	Phe	e Arg	r Gly	Leu	ı Met	: Lys	Arg	Arg	g Ser	Sei	. Val	-					

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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/939,483

DATE: 09/13/2001 TIME: 11:24:56

Input Set : A:\DIV-2.txt

Output Set: N:\CRF3\09132001\I939483.raw

L:13 M:282 W: Numeric Field Identifier Missing, <140> CURRENT APPLICATION NUMBER: is Added.